

U.S. Patent Application Serial No. 09/726,381
Amendment dated September 23, 2003
Reply to Office Action of June 27, 2003

REMARKS

Applicants' attorney wishes to thank Examiner Pierce and his Supervisory Examiner Cole for the courteous and helpful interview of September 17, 2003 during which the prior art, present claims and present arguments were discussed.

The claims as they exist at present are as follows:

Claim 1 (previously presented): A three-dimensional ceramics structure, comprising:

a three-dimensional ceramics structure of solely ceramic material, obtained by baking an intermediate comprising a three-dimensional fabric having continuous apertures and ceramics materials adhered to surfaces of yarns constituting said three-dimensional fabric to eliminate organic components of said three-dimensional fabric, wherein said three-dimensional fabric comprises upper and lower fabric layers disposed apart at a certain distance and each having a plurality of apertures and connecting yarns connecting said upper fabric layer with said lower fabric layer.

Claim 2 (canceled)

Claim 3 (previously presented): The three-dimensional ceramics structure as recited in claim 1, further comprising one or a plurality of fabric layers each having apertures and disposed between said upper fabric layer and said lower fabric layer.

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Claim 4 (previously presented): The three-dimensional ceramics structure as recited in claim 1, wherein high-performance material is adhered to a surface of said three-dimensional ceramics structure.

Claim 5 (canceled)

Claim 6 (previously presented): The three-dimensional ceramics structure as recited in claim 3, wherein high-performance material is adhered to a surface of said three-dimensional ceramics structure.

Claim 7 (withdrawn): A method for manufacturing a three-dimension ceramics structure, including the steps of:

immersing a three-dimension structural fabric having penetrated apertures into ceramics slurry; and

baking said three-dimension structural fabric raised from said ceramics slurry at a predetermined temperature to eliminate organic components of said three-dimension structural fabric to thereby obtain said three-dimension ceramics structure.

Claim 8 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 7, wherein said ceramics slurry contains organic bonding agents.

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Claim 9 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 7, wherein said three-dimension structural fabric comprises upper and lower fabric layers disposed at a certain distance and each having a plurality of apertures and connecting yarns connecting said upper and lower fabric layers.

Claim 10 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 8, wherein said three-dimension structural fabric comprises upper and lower fabric layers disposed at a certain distance and each having a plurality of apertures and connecting yarns connecting said upper and lower fabric layers.

Claim 11 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 9, wherein at least some of said connecting yarn include a monofilament yarn of from 100 to 2000 denier.

Claim 12 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 11, wherein a combined yarn made by combining one or two kinds of yarns selected from the group including a spun yarn and a multifilament yarn with a monofilament yarn of from 100 to 2000 denier is used as said connecting yarn.

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Claim 13 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 11, wherein one or two kinds of yarns selected from the group including a spun yarn and a multifilament yarn and a monofilament yarn of from 100 to 2000 denier are independently used as said connecting yarn, without using as their combination.

Claim 14 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 11, wherein at least some of yarns constituting said upper and lower fabric layers include one or two kinds of yarns selected from the group including a spun yarn and a multifilament yarn.

Claim 15 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 12, wherein at least some of yarns constituting said upper and lower fabric layers include one or two kinds of yarns selected from the group including a spun yarn and a multifilament yarn.

Claim 16 (withdrawn): The method for manufacturing a three-dimension ceramics structure as recited in claim 13, wherein at least some of yarns constituting said upper and lower fabric layers include one or two kinds of yarns selected from the group including a spun yarn and a multifilament yarn.

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Claim 17 (previously presented): A three-dimensional ceramics structure, of solely ceramics material, comprising a three-dimensional structure made of ceramics, wherein said structure comprises upper and lower layers disposed apart at a certain distance and an intermediate connecting layer connecting said upper layer with said lower layer.

Claim 18 (canceled)

Claim 19 (previously presented): The three-dimensional ceramics structure as recited in claim 17, further comprising one or a plurality of intermediate ceramics layers disposed between said upper and lower ceramics layers.

Claim 20 (previously presented): The three-dimensional ceramics structure as recited in claim 17, wherein high-performance material is adhered to a surface of said ceramics structure.

Claim 21 (previously presented): The three-dimensional ceramics structure as recited in claim 20, wherein said high-performance material is catalyst or adsorbent.

Claims 7-16 have been withdrawn from consideration.

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The claims that are now under consideration are Claims 1, 3, 4, 6, 17 and 19-21. These claims are rejected as obvious under 35 U.S.C. §103(a) in view of a combination of Kataoka et al. (JP 2-149481) and Tokumitsu et al. (JP 4-45819). Reconsideration and removal of the rejection is respectfully requested in view of the following remarks.

The Office Action states that Kataoka shows a ceramic body usable as a filter made by impregnating organic fibers with a ceramic slurry and firing the same to eliminate the organic components. It is admitted that Kataoka does not teach connecting yarns to connect layers of fabric together. Tokumitsu is then cited to teach a three-dimensional filter having first and second filter layers held together by connecting yarns.

The Office Action then alleges that one would be led to combine the two references because both are directed to filters that support a catalyst, with the catalyst acting as a filtering material, and that both use textile substrates to support a catalyst.

While the Kataoka reference teaches a ceramic body made by impregnating a woven base of organic fibers with a ceramic slurry and firing to remove the organics, there is admittedly no teaching or suggestion of connecting yarns to connect layers of fabric together, with or without ceramic slurry.

There is no teaching or suggestion in the Kataoka reference or the Tokumitsu reference that they should or could be combined.

In Tokumitsu, the three-dimensional knitted fabric itself remains as a permeable container which contains an absorbent such as active carbon therein in a permeable manner. To the contrary, in Kataoka, although a three-dimensional knitted fabric is utilized as a structural base of a ceramics

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structure, the same is thereafter fired and totally eliminated. Accordingly, Tokumitsu and Kataoka are completely different in purpose, function and effect of the three-dimensional knitted fabric. In Tokumitsu, the three-dimensional knitted fabric is an essential member constituting the filter. In other words, the three-dimensional knitted fabric constitutes the filter. To the contrary, in Kataoka, although a three-dimensional knitted fabric is required during the manufacturing process of the filter, the three-dimensional knitted fabric itself is not at all required to constitute the filter. In other words, the three-dimensional knitted fabric does not constitute the filter.

Furthermore, in Tokumitsu, the ceramic, such as alumina (absorbent), is granulated, and a number of these granulated absorbents are put in the permeable container in a movable manner. To the contrary, in Kataoka, the ceramic is formed into a three-dimensional structure, that is, the ceramic is formed into a three-dimensional structure having a certain exterior configuration and interior structure. Thus, Tokumitsu and Kataoka are completely different as to any ceramics structure.

As will be understood from the above, Tokumitsu and Kataoka are completely different in their entire structure, the structure of each member, the functions, and the effects. Accordingly, there is no reason why one would be led to combine the two references. Only an earlier review of the present specification might lead one to combine these distinct references.

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A comparison of Kataoka, Tokumitsu and the present claimed structure shows the following:

Kataoka	Tokumitsu	Present Claimed Structure
1. A three-dimensional ceramic body with no ceramic or other connecting yarns	First and second organic knitted layers connected by organic connecting yarns (no ceramic body).	A three-dimensional apertured structure of solely ceramic material of spaced ceramic layers with inter-connecting ceramic yarns.
2. Ceramic body as a catalyst support	A knitted layer container-like structure to contain an absorbent such as activated carbon.	A three-dimensional apertured structure with a material adhered to the surface of the three-dimensional structure.
3. Ceramic body (no organics and no ceramic connecting yarns)	Adhesive sheets or a hot melt resin on both sides of structure adheres braided material 1 and unwoven cloth 8.	A three-dimensional ceramic structure (no organics) with connecting ceramic yarns and surface material

In view of the above distinct teachings, why would one be led, absent first a review of Applicants' specification, to combine the distinct and opposed teachings of Kataoka and Tokumitsu?

Contrary to the statement on Page 4 of the Office Action, both references do not "use textile substrates to support the catalyst." There are no remaining organics in Kataoka.

Applicants' claims 1, 3, 4, 6, 17 and 19-21 are believed to be unobvious and patentable. Early action towards allowance thereof is respectfully requested.

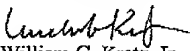
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In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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